PATENT APPLICATION

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Applicant: Stefan Eckart	Examiner: Po Lin Chieu
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Title: **METHOD AND APPARATUS FOR RETRIEVING DIGITAL VIDEO USING SUCCESSIVE LINEAR APPROXIMATION**

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Christine A. Wright

SUPPLEMENTAL AFTER FINAL AMENDMENT AND RESPONSE

Dear Sir:

In response to the Final Office Action mailed February 24, 2004, and the Advisory Action mailed May 19, 2004, Applicant submits the following supplemental after final amendment and remarks.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 12 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. – 20. (Canceled)

21.   (Previously presented)   A method for retrieving digital video stored in memory comprising:

(a)   obtaining a specific start time of at least a portion of digital video represented as a t-coordinate;

(b)   selecting a minimum n-coordinate and a maximum n-coordinate to bound a specific start location of the digital video represented as a n-coordinate;

(c)   obtaining a minimum t-coordinate based on the minimum n-coordinate;

(d)   obtaining a maximum t-coordinate based on the maximum n-coordinate;

(e)   deriving a linear reference between the minimum n and t coordinates and the maximum n and t coordinates;   ·

(f)   obtaining a reference n-coordinate lying on the linear reference based on the t-coordinate;

(g)   determining a reference t-coordinate lying on a non-linear monotonic, function, representing digital video stored over time, based on the reference n-coordinate;

(h)   determining whether the reference t-coordinate is substantially similar to the t-coordinate;

(i)   when the reference t-coordinate is substantially similar to the t-coordinate, determining that the reference n-coordinate is substantially equal to the n-coordinate, wherein the t-coordinate and the n-coordinate define a starting point of digital video; and

(j)   retrieving from memory the digital video based on the starting point.

22.   (Previously presented)   The method of claim 21 further comprises, when the reference t-coordinate is not substantially similar to the t-coordinate,

(a)   determining whether the reference t-coordinate is greater than the t-coordinate;

(b)   when the reference t-coordinate is greater than the t-coordinate, redefining the maximum t-coordinate to equal the reference t-coordinate to produce a first maximum t-coordinate;

(c)   determining a first maximum n-coordinate lying on the non-linear monotonic function based on the first maximum t-coordinate;

(d)   deriving a first linear reference between the minimum n and t coordinates and the first maximum n and t coordinates;

(e)   obtaining a first reference n-coordinate lying on the first linear reference based on the t-coordinate;

(f)   determining a first reference t-coordinate lying on the non-linear monotonic function based on the first reference n-coordinate;

(g)   determining whether the first reference t-coordinate is substantially similar to the t-coordinate; and

(h)   when the first reference t-coordinate is substantially similar to the t-coordinate, determining that the first reference n-coordinate is substantially equal to the n-coordinate.

23.   (Previously presented)   The method of claim 21 further comprises, when the reference t-coordinate is not substantially similar to the t-coordinate;

(a)   determining whether the reference t-coordinate is less than the t-coordinate;

(b)   when the reference t-coordinate is less than the t-coordinate, redefining the minimum t-coordinate to equal the reference t-coordinate to produce a first minimum t-coordinate;

(c)   deriving a first linear reference between the first minimum n and t coordinates and the maximum n and t coordinates;

(d)   obtaining a first reference n-coordinate lying on the first linear reference based on the t-coordinate;

(e)   determining a first reference t-coordinate lying on the non-linear monotonic function based on the first reference n-coordinate;

(f)   determining whether the first reference t-coordinate is substantially similar to the t-coordinate; and

(g)   when the first reference t-coordinate is substantially similar to the t-coordinate, determining that the first reference n-coordinate is substantially equal to the n-coordinate.

24.   (Previously presented)   The method of claim 21, wherein the t-coordinate comprises a time stamp value associated with a beginning of a video program stored in a video

file and wherein the n-coordinate comprises a byte count value associated with the beginning of the video program.

25.   (Previously presented) The method of claim 24, wherein the video file comprises MPEG video data and MPEG audio data.

26.   (Previously presented) A method for retrieving digital video stored in memory comprising:

(a)   obtaining a specific start time of digital video represented as a t-coordinate;

(b)   selecting a minimum point and a maximum point that bound the starting point, wherein the minimum point and the maximum point lie on a non-linear monotonic function, representing digital video stored over time;

(c)   deriving a linear reference between the minimum and the maximum points;

(d)   obtaining a reference n-coordinate lying on the linear reference based on the t-coordinate;

(e)   determining a reference t-coordinate lying on the non-linear monotonic function based on the reference n-coordinate;

(f)   determining whether the reference t-coordinate is substantially similar to the t-coordinate;

(g)   when the reference t-coordinate is not substantially similar to the t-coordinate, redefining the minimum point or the maximum point based on the reference t-coordinate;

(h)   repeating steps (b) through (g) until the reference t-coordinate is substantially similar to the t-coordinate;

(i)   when the reference t-coordinate is substantially similar to the t-coordinate, determining that the reference n-coordinate is substantially equal to a specific start location of digital video represented as the n-coordinate, wherein the t-coordinate and the n-coordinate define the starting point; and

(j)   retrieving from memory the digital video based on the starting point.

27.   (Previously presented) The method of claim 26, wherein step (g) comprises, when the reference t-coordinate is not substantially similar to the t-coordinate,

(a)   redefining the minimum point to correspond to the reference t-coordinate and the reference n-coordinate, when the reference t-coordinate is less than the t-coordinate.

28.   (Previously presented) The method of claim 26, wherein step (g) further comprises, when the reference t-coordinate is not substantially similar to the t-coordinate,

(a)   redefining the maximum point to correspond to the reference t-coordinate and the reference n-coordinate, when the reference t-coordinate is greater than the t-coordinate.

29.   (Previously presented) The method of claim 26, wherein the t-coordinate comprises a time stamp value associated with a beginning of a video program stored in a video file and wherein the n-coordinate comprises a byte count value associated with the beginning of the video program.

30.   (Previously presented) The method of claim 29, wherein the video file comprises MPEG video data and MPEG audio data.

31.   (Previously presented) An apparatus for retrieving digital video stored in memory comprising:

(a)   a processing module; and

(b)   memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to: (i) obtain a specific start time of at least a portion of digital video represented as a t-coordinate; (ii) select a minimum n-coordinate and a maximum n-coordinate to bound a specific start location of digital video represented as a n-coordinate; (iii) obtain a minimum t-coordinate based on the minimum n-coordinate; (iv) obtain a maximum t-coordinate based on the maximum n-coordinate; (v) derive a linear reference between the minimum n and t coordinates and the maximum n and t coordinates; (vi) obtain a reference n-coordinate lying on the linear reference based on the t-coordinate; (vii) determine a reference t-coordinate lying on a non-linear monotonic function, representing digital video stored over time, based on the reference n-coordinate; (viii) determine whether the reference t-coordinate is substantially similar to the t-coordinate; (ix) when the reference t-coordinate is substantially similar to the t-coordinate, determine that the reference n-coordinate is substantially equal to the n-coordinate, wherein the t-coordinate and the n-coordinate define a starting point of digital video; and (x) retrieve from memory the digital video based on the starting point.

32.   (Previously presented) The apparatus of claim 31, wherein the memory further comprises operational instructions that cause the processing module to, when the reference t-coordinate is not substantially similar to the t-coordinate,

(a)   determine whether the reference t-coordinate is greater than the t-coordinate;

(b)   when the reference t-coordinate is greater than the t-coordinate, redefine the maximum t-coordinate to equal the reference t-coordinate to produce a first maximum t-coordinate;

(c)   determine a first maximum n-coordinate lying on the non-linear monotonic function based on the first maximum t-coordinate;

(d)   derive a first linear reference between the minimum n and t coordinates and the first maximum n and t coordinates;

(e)   obtain a first reference n-coordinate lying on the first linear reference based on the t-coordinate;

(f)   determine a first reference t-coordinate lying on the non-linear monotonic function based on the first reference n-coordinate;

(g)   determine whether the first reference t-coordinate is substantially similar to the t-coordinate; and

(h)   when the first reference t-coordinate is substantially similar to the t-coordinate, determine that the first reference n-coordinate is substantially equal to the n-coordinate.

33.   (Previously presented) The apparatus of claim 31, wherein the memory further comprises operational instructions that cause the processing module to, when the reference t-coordinate is not substantially similar to the t-coordinate,

(a)   determine whether the reference t-coordinate is less than the t-coordinate;

(b)   when the reference t-coordinate is less than the t-coordinate, redefine the minimum t-coordinate to equal the reference t-coordinate to produce a first minimum t-coordinate;

(c)   determine a first minimum n-coordinate lying on the non-linear monotonic function based on the first minimum t-coordinate;

(d)   derive a first linear reference between the first minimum n and t coordinates and the maximum n and t coordinates;

(e)   obtain a first reference n-coordinate lying on the first linear reference based on the t-coordinate;

(f)   determine a first reference t-coordinate lying on the non-linear monotonic function based on the first reference n-coordinate;

(g)   determine whether the first reference t-coordinate is substantially similar to the t-coordinate; and

(h)   when the first reference t-coordinate is substantially similar to the t-coordinate, determine that the first reference n-coordinate is substantially equal to the n-coordinate.

34.   (Previously presented)   The apparatus of claim 31, wherein the t-coordinate comprises a time stamp value associated with a beginning of a video program stored in a video file and wherein the n-coordinate comprises a byte count value associated with the beginning of the video program.

35.   (Previously presented)   The apparatus of claim 34, wherein the video file comprises MPEG video data and MPEG audio data.

36.   (Previously presented) An apparatus for retrieving digital video stored in memory comprising:

(a)   a processing module; and

(b)   memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to: (i) obtain a specific start time of digital video represented as a t-coordinate; (ii) select a minimum point and a maximum point that bound the starting point, wherein the minimum point and the maximum point lie on a non-linear monotonic function representing digital video stored over time; (iii) derive a linear reference between the minimum and the maximum points; (iv) obtain a reference n-coordinate lying on the linear reference based on the t-coordinate; (v) determine a reference t-coordinate lying on the non-linear monotonic function based on the reference n-coordinate; (vi) determine whether the reference t-coordinate is substantially similar to the t-coordinate; (vii) when the reference t-coordinate is not substantially similar to the t-coordinate, redefine the minimum point or the maximum point based on the reference t-coordinate; (viii) repeat steps (ii) through (vii) until the reference t-coordinate is substantially similar to the t-coordinate; (ix) when the reference t-coordinate is substantially similar to the t-coordinate, determine that the reference n-coordinate is substantially equal to a specific start location of digital video represented at the n-coordinate, wherein the t-coordinate and the n-coordinate define the staring point; and (x) retrieve from memory the digital video based on the starting point.

37.   (Previously presented) The apparatus of claim 36, wherein the memory further comprises operational instructions that cause the processing module to, when the reference t-coordinate is not substantially similar to the t-coordinate,

(a)   redefine the minimum point to correspond to the reference t-coordinate and the reference n-coordinate, when the reference t-coordinate is less than the t-coordinate.

38. (Previously presented) The apparatus of claim 36, wherein the memory further comprises operational instructions that cause the processing module to, when the reference t-coordinate is not substantially similar to the t-coordinate,

(a) redefine the maximum point to correspond to the reference t-coordinate and the reference n-coordinate, when the reference t-coordinate is greater than the t-coordinate.

39. (Previously presented) The apparatus of claim 36, wherein the t-coordinate comprises a time stamp value associated with a beginning of a video program stored in a video file and wherein the n-coordinate comprises a byte count value associated with the beginning of the video program.

40. (Previously presented) The apparatus of claim 39, wherein the video file comprises MPEG video data and MPEG audio data.

41. – 43. (canceled)

REMARKS

Please cancel, without prejudice, claims 41-43 since all other remaining claims have been allowed. As such, please pass claims 21-40 to allowance.

The Examiner is invited to contact the below-listed attorney if the Examiner believes that a telephone conference will advance the prosecution of this application.

Respectfully submitted,

Dated: _June 24, 2004_

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